

Liverpool John Moores University

Title: REAL-TIME SYSTEMS
Status: Definitive
Code: **6060COMP** (117476)
Version Start Date: 01-08-2019

Owning School/Faculty: Computer Science
Teaching School/Faculty: Computer Science

Team	Leader
David Lamb	Y
Gabor Kecskemeti	

Academic Level: FHEQ6
Credit Value: 24
Total Delivered Hours: 74
Total Learning Hours: 240
Private Study: 166

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	24
Tutorial	24

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Apply the Requirements and Architecture Models to perform the analysis and design of a real-time system.	20	
Report	AS2	Perform the analysis and design of a real-time system using the UML.	40	
Exam	AS3	Examination.	40	2

Aims

To provide an in-depth study various modelling methods for real-time software systems.

To develop knowledge of the selection and use of appropriate modelling methods for real-time software systems development.

To develop practical experience in the use of modelling methods and associated CASE tools for the analysis and design of real-time software systems.

Learning Outcomes

After completing the module the student should be able to:

- 1 Critically evaluate the operational characteristics of real-time systems and their development techniques.
- 2 Critically review and integrate the theoretical aspects of real-time systems.
- 3 Apply Data Flow modelling methods to the analysis, specification and design of real-time systems/applications.
- 4 Apply Object Oriented modelling methods to the analysis, specification and design of real-time systems/applications.
- 5 Use software tools to facilitate the application of the modelling methods.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Data Flow modelling	3	
Object Oriented modelling	4	5
Examination	1	2

Outline Syllabus

Real-Time Systems - Operations: characteristics, timing issues, mechanisms, structures, and applications. Safety critical systems: concepts, features, criticality, requirements, and controls. Operation modelling: concepts, methods, analysis, and applications.

Requirements Analysis for Real-Time Software Systems - Structured requirements analysis: concepts, principles, timing requirements, processes, methods, and applications. Object oriented requirements analysis: principles, processes, identification of objects and classes, analysis of external system behaviours, modelling of object interactions, defining class structures, and analysis and modelling of object behaviours.

Real-Time Software Systems Design – Structured system design: concepts, principles, safety issues, fault tolerance techniques, design methods, and applications. Object oriented system design: design principles, architecture design, mechanistic design, detailed design, design strategies, design patterns, and activity modelling.

CASE Tools: Effectiveness of CASE tools, and use of CASE tools for the analysis and design of real-time software systems.

Learning Activities

Include attending lectures, tutorials and labs, as well as reading books and handouts.

Notes

This module covers analysis, specification and design issues related to real-time software systems/applications.